

HOW NEGATIVE IS A NEGATIVE CT IN BLUNT ABDOMINAL TRAUMA?

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Aim: CT is the imaging modality of choice in children in trauma. Concerns of missing an intraabdominal injury lead clinicians to admit children for a period of observation despite normal imaging. To date, there is no consensus on management of children with negative trauma CT following blunt abdominal trauma (BAT).

We performed a systematic review of the literature to determine the negative predictive value of a negative CT abdomen in children following BAT.

Methods: Search of the Pubmed database from 01/01/1980-31/12/2014; and manual search of references.

Results: Initial search: 972 articles. Following the PRISMA process 4 papers were included. No randomized controlled trials, 3 observational cohort studies, 1 non-systematic review.

Awasthi 2008: 1085 children with normal CT following BAT. No missed injuries requiring intervention. NPV of negative CT abdomen to exclude intra-abdominal injury 99.8% (95%CI: 99.3%-100%).

Kerrey 2013: 3819 children. 3 intestinal injuries not visible on initial CT, 2 pancreatic injuries, 1 low-grade liver/spleen laceration. NPV of negative CT abdomen 99.6% (95%CI: 99.3%-99.8%).

Holmes 2012: 2734 adults. 8 missed injuries (0.4%), 5 required operative intervention: 2 pancreatic drainage, 1 liver packing, 1 serosal tear oversewing, 1 splenectomy. NPV of negative CT abdomen 99.7% (95%CI: 99.4%-99.9%).

Hom 2010: non-systematic review; included study by Awasthi 2008, and 2 smaller patient groups. NPV 99.8% (95%CI: 99.6%-99.9%).

Overall, the percentage of missed injuries ranged from 0.1%-0.4% and the NPV for CT to detect intra-abdominal injury from 99.6%-99.8%.

Conclusion: Three observational cohort studies have been published with the aim to detect the rate of missed intra-abdominal injury following "negative" CT after BAT. These studies show that the NPV of CT is very high. Hence, a negative abdominal CT scan rules out significant intraabdominal injury to almost 100%. Discharge directly from the emergency department should be considered if there are no other reasons for admission.